



# UNITED STATES PATENT AND TRADEMARK OFFICE

10

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,919	01/08/2002	Brett P. Masters	2001841-0011	5583

24280 7590 10/30/2003

Choate, Hall & Stewart  
Exchange Place  
53 State Street  
Boston, MA 02109

EXAMINER

DOUGHERTY, THOMAS M

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 10/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/041,919	<b>Applicant(s)</b> <i>14</i> MASTERS ET AL.	
	<b>Examiner</b> Thomas M. Dougherty	<b>Art Unit</b> 2834	

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09/10/23.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

The applicants' arguments concerning the Roshon patent are persuasive and the rejections that relied upon that reference are hereby withdrawn. The Ayusawa reference however shows each claimed feature of the invention. It is a ceramic that is electroactive that conforms by bending to a curved surface. Each structural feature is shown, the ceramic, planar, having grooves on one of its surfaces and bending around a curved surface. It is noted as comprising PZT and having grooves, and is noted as being a green sheet. PZT is the same material the Applicants intend for their device. See page 87, line 9 of the Disclosure. Additionally, the applicants indicate a broader ceramic field of material at page 4, lines 11 and 12: "This process may be applied to any type of electroactive ceramic material in any base form". Clearly Ayusawa falls within the aegis of this description. The PZT of Ayusawa is indeed burnt as the applicants maintain, but it is still an electroactive material before it is burnt since it is PZT. The burning creates a composite since the atmosphere is one of PbO, and melts the core cylinder around which the PZT is wrapped. As Ayusawa shows an electroactive ceramic which is capable of being wrapped around a core material, and which has grooves, there is no reason to suspect that it functions other than the applicants' electroactive ceramic, since each structural aspect that is claimed by the Applicants, is met by Ayusawa. So for it to function differently, then the Applicants invention cannot function as claimed. Consequently, that rejection is maintained. As the Dias reference, newly cited, reads on each structural feature of the 102 rejection in which it is applied, it

too provides no reason to suspect that it functions other than the applicants' electroactive ceramic.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 18 and 20 are rejected under 35 U.S.C. 102(b) as being clearly anticipate by OKI Electric (JP 64-25583). Oki shows (figs. 1B and 2) an electromechanical device, comprising a substantially planar electroactive ceramic member (18) having grooves (22) defined on a planar surface of the member, whereby the grooves (22) allow the member to conform to a curved surface.

The electromechanical device is an electromechanical sensor or actuator (see last line of BASIC-ABSTRACT).

The grooves (22) are substantially parallel and the member can conform to a cylindrical surface (24).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 18 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dias (US 4,992,692) in view of Ikehata et al. (US 5,076,314). Dias shows (fig. 5) an electromechanical device, comprising a substantially planar electroactive ceramic (see claim 5 where he notes use of PZT) member (36) having grooves (34) defined on a planar surface of the member, whereby the grooves allow the member to conform to a curved surface (41).

The electromechanical device is an electromechanical sensor or actuator (see TITLE).

The grooves are substantially concentric (34) and the member can conform to a spherical surface (41).

Dias does not show a substantially planar bimorph (see fig. 4) electroactive ceramic member. Ikehata et al. show (fig. 1) a substantially planar bimorph electroactive ceramics member (see ABSTRACT) configured to bend when activated. They do not show grooves.

It would have been obvious to one of ordinary skill in the art to provide a second layer in the device of Dias in order to make it a bimorph electroactive structure so that it could be driven with more power.

Additionally, it would have been obvious to one having ordinary skill in the art to so configure the Dias electroactive ceramic since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over either of OKI Electric (JP 64-25583) or Dias (US 4,992,692). Given the invention of either OKI or Dias as noted above, neither notes whether or not their electromechanical device can conform to a curved surface having a radius of curvature no greater than 0.25". It would have been an obvious matter of design choice to miniaturize either invention, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105, USPQ 237 (CCPA 1955).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over OKI Electric (JP 64-25583) in view of Ikehata et al. (US 5,076,314). Given the invention of OKI Electric as noted above, they fail to show a bimorph structure. Ikehata et al. show (fig. 1) a substantially planar bimorph electroactive ceramics member (see ABSTRACT) configured to bend when activated. They do not show grooves.

It would have been obvious to one of ordinary skill in the art to provide a second layer in the device of OKI Electric in order to make it a bimorph electroactive structure so that it could be driven with more power.

Additionally, it would have been obvious to one having ordinary skill in the art to so configure the Dias electroactive ceramic since it has been held that here duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

### ***Conclusion***

Art Unit: 2834

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art cited in this action again reveals at least some of the claimed features of the Applicants' invention.

This is not a final rejection.

Direct inquires to Examiner Dougherty at (703) 308-1628.

*tmd*  
tmd

October 27, 2003

*Charles M. Dougherty*  
Charles M. Dougherty